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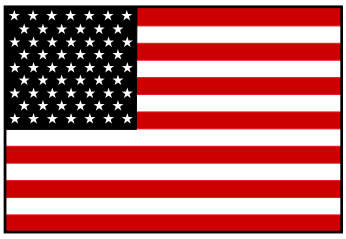
AVIATION MAINTENANCE ALERTS



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CONTENTS

AIRPLANES

HELICOPTERS

AMATEUR, EXPERIMENTAL, AND SPORT AIRCRAFT

POWERPLANTS AND PROPELLERS

ACCESSORIES

AIR NOTES

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

AVIATION MAINTENANCE ALERTS

The Aviation Maintenance Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Designee Standardization Branch (AFS-640); P.O. Box 25082; Oklahoma City, OK 73125-5029.

AIRPLANES

AMERICAN CHAMPION

American Champion; Model 7GCBC; Electrical System Failures; ATA 2400

This article was the result of FAA Safety Recommendation number 98.027 and was furnished by the FAA Aircraft Certification Office located in Chicago, Illinois.

A sudden and complete engine failure required the pilot to make a forced, off-airport landing.

The FAA and the aircraft manufacturer conducted an accident investigation and determined the engine failure was caused by melted "P-lead" wires that were bundled with an overheated wire connecting the master switch and the overvoltage relay. The cause of the overheated wire could not be readily determined; however, it was clear that the electrical current rating of the wire was exceeded resulting in overheating and failure.

The accident investigators found several service difficulties on older model aircraft, which resulted from lack of circuit protection devices. American Champion issued Service Letter (SL) number 418, dated January 19, 2001, titled "Electrical System Update." The SL contains inspection and conversion information to ensure circuit protection devices are installed on the battery bus, the alternator, the power to the alternator regulator, and the overvoltage circuitry. Current American Champion aircraft models incorporate an inline fuse which protects the wire supplying power to the voltage regulator and the overvoltage circuitry.

Service Letter number 418, Revision A, is applicable to most Model 7 and 8 series aircraft. Please refer to the service letter for specific model applicability. Service Letter number 418 is available on the Internet at the following address: <http://www.amerchampionaircraft.com>. You may find the publication by clicking on "Service & Technical."

Part total time not applicable.

American Champion; Model 8KCAB; Decathlon; Wing Lift Strut Defect; ATA 5740

While conducting an annual inspection, the technician found a wing lift strut severely damaged.

The lower mount area on the right wing forward lift strut was extremely corroded. In addition, the strut was cracked approximately 3 inches from the mount bolt hole upward. The damage to this area was hidden under the fairing and may have gone undetected for several years.

The submitter suggested giving covered or hidden areas close scrutiny during scheduled inspections.

Part total time-1,548 hours.

AMERICAN GENERAL

American General; Model AA5B; Tiger; Alternator Failure; ATA 2434

During a flight, the alternator failed, and the pilot landed the aircraft safely. He delivered the aircraft to a maintenance shop and stated the alternator was recently overhauled. He asked the maintenance shop to determine the cause of the alternator failure.

The technician removed and disassembled the alternator (FORD P/N DOFF-10300J) and found evidence that the brushes were replaced during the previous overhaul. However, one of the brushes was completely worn out and the other was worn approximately 50 percent. The wear rate seems very excessive, especially considering the uneven wear which suggests a large variance in brush quality.

Part total time-672 hours.

BEECH

Beech; Models 19, 23, and 24 Series; Stabilator Structural Defects; ATA 5510

The submitter reported he has found stabilator structural defects on many of the aircraft listed above.

The defects seem to be concentrated on both sides of the lower surface of the stabilator approximately 6 inches outboard of the empennage. The defects include working rivets, skin cracks, and unairworthy repairs. On two occasions, the submitter has replaced the aft center stabilator spar and the aft lower skin panels. During one repair, he found the spar cracked; and the other spar was severely weakened due to the installation of a .250-inch “Cherry Max” rivet with three times the required number of rivets. It appears these problems arise after the accumulation of over 2,000 airframe hours.

The submitter believes the original spar does not offer enough support to control “oil canning” even though the spar is not cracked. Fasteners, which are added, working, and oversized, can lead to failure of the spar and/or skin panel.

Beech Service Instruction 1167 addresses this problem and offers an improved spar and skin panel that are bonded together. Also, Airworthiness Directive (AD) 87-02-08 and Service Bulletin (SB) 2182 deal with inspection of stabilator hinge brackets for working rivets.

Part total time-2,369 hours.

Beech; Model C-23; Sundowner; Wing Spar Damage; ATA 5711

While inspecting the aircraft after an accident, a technician discovered severe structural corrosion in the wings.

The left and right lower wing spar caps were extremely corroded, and the metal was deeply exfoliated. The corrosion damage began just outboard of the spar splice and continued outboard to the end of the spars.

Since the damage was quite obvious and easily seen, the submitter questioned why it was not found during a scheduled inspection. This area deserves close attention during inspections and maintenance.

Part total time-2,924 hours.

Beech; Model C24R; Sierra; Landing Gear Failure; ATA 3230

While making an approach for landing, the pilot could not lower the left main landing gear. All efforts to extend the left main gear failed, and the pilot made a gear-up landing.

After raising the aircraft from the runway, the technician found the left main gear up-lock would not release. He used a pry bar and considerable effort to release the up-lock and the gear fell to the “down-and-locked” position. He moved the aircraft to a hangar for inspection and repair. He disassembled the up-lock assembly (P/N 169-380057-3) and found the shaft and the cylinder head, through which the shaft runs, were severely corroded. This caused the up-lock cylinder to seize.

The submitter did not offer a cause for this defect; however, it seems likely that neglect and lack of lubrication were contributing factors.

Part total time-2,323 hours.

Beech; Model 58; Baron; Fuselage Structural Defect; ATA 5312

While conducting other maintenance, a technician discovered a fuselage structural defect.

He found a crack in the bulkhead (P/N 002-440023-75) located at fuselage station (FS) 257.6. The crack was approximately 1 inch long and was in the upper left corner of the bulkhead. He speculated that movement of the horizontal stabilizer imposes stress on the bulkhead.

Beech Service Bulletin (SB) 0990, Revision II, contains instructions for inspection of this area and offers a reinforcement kit. New bulkhead assemblies, with the same part number, come with a reinforcement plate installed.

Part total time-4,538 hours.

Beech; Model 95B55; Baron; Engine Fuel System Defect; ATA 7314

During a test flight, the pilot noticed a decrease in normal fuel pressure on the left engine. He returned to the departure airport and made a safe landing.

The left engine (factory zero time rebuilt, Teledyne Continental, IO-470) was recently installed. While investigating, the technician found the alternator bracket contacting the engine-driven fuel pump (P/N 634053) inlet fitting. The manufacturer installed both of these components new. This problem was caused by the fuel inlet fitting proximity to the alternator bracket and that it was not properly "clocked." This defect resulted in fuel leakage inside the engine cowling, and created a severe flight safety hazard. He installed a new fuel pump and discovered it also contacted an arm of the alternator bracket. The manufacturer's representative instructed him to modify the alternator bracket to provide adequate clearance for the pump inlet fitting.

The submitter recommended that all maintenance personnel check for proper clearance between these components during installation.

Engine total time not reported.

Beech; Model 99; Airliner; Rudder Control System Damaged; ATA 2720

During a scheduled inspection, a technician discovered the rudder bellcrank (P/N 50-524327) was loose where it attaches to the rudder tube collar assembly.

Further inspection disclosed the looseness between the bellcrank and the collar was caused by severe corrosion on the bellcrank attachment holes.

The submitter recommended that maintenance personnel periodically disassemble, inspect, and lubricate the rudder bellcrank assembly components.

Part total time not reported.

Beech; Model B100; King Air; Defective Wheel Assembly; ATA 3246

While washing the aircraft, a worker discovered a crack in a main landing gear wheel assembly.

The crack was located in the outboard radius of the left inboard wheel and traveled around the radius approximately 3.75 inches. This wheel assembly (P/N 115-8001-4) was manufactured in February 1989, and was installed new in June 1990.

The submitter attributed this defect to age and a high number of cycles.

This wheel assembly had accumulated approximately 2,563 landings.

Beech; Model 200; King Air; Engine Exhaust System STC; ATA 7800

FAA Airworthiness Inspector Larry Jones, of the Scottsdale, Arizona, Flight Standards District Office furnished the information for this article.

Supplemental Type Certificate (STC) SA8986SW involves a major alteration of the engine exhaust system. The STC incorporates extended full contour exhaust stacks, which is authorized for all Beech 200 models.

The exhaust stacks incorporate a welded port on the front that allows a connection point for installing a flow through anti-ice kit. The anti-ice kit is authorized for installation by STC SA2905NM and incorporates a metal duct assembly that attaches (clamps) to the port on the exhaust stacks and the heater ducts on the lower end at the bottom portion of the engine cowling.

Problems have arisen involving the angle of protrusion on the welded exhaust stack port. If the angle of the stack is not oriented slightly inboard (approximately 5 to 7 degrees), the attaching duct can chafe and wear on the adjacent cowling latches. The chafing action may penetrate the metal duct and damage the cowling latches. (Refer to the illustration.) Penetration of the duct will release extremely hot engine exhaust gases inside the cowling and create a very serious hazard to flight safety.

It appears there is no standard angle for the ducts welded to the exhaust stack. Consequently, the duct angle is different, to varying degrees, with each unit.

Part total time not applicable.

Beech; Model 200; King Air; Dangerous Landing Gear Defects; ATA 3213

During a maintenance preflight inspection, the technician discovered cracks on both main landing gear struts.

Both main landing gear struts (P/N 99-810028-15) were cracked at the upper torque knee attachment lug. The cracks were approximately .5 inch long. Failure of even one torque knee could lead to loss of the lower strut and wheel assembly or “castering” of a wheel assembly during landing/taxiing. If not found and repaired, these defects could cause a catastrophic accident.

Part total time-5,843 hours.

Beech; Model 300; King Air; Fuel Cell Damage; ATA 2810

The submitter of this report has experienced several incidents of damage and fuel leakage from the nacelle fuel cell cover gasket.

Commonly, the gasket (P/N 50-9215587-3) is found extruded from under the cover plate and cracked. The submitter also stated the cover plate can be deformed due to "excessive fastener torque." The manufacturer's technical data calls for 45 to 50 inch-pounds of torque on the fasteners. The submitter suggested the manufacturer consider lowering the required torque value and/or modifying the gasket to be more substantial.

Part total time not reported.

BELLANCA

Bellanca; Model 17-31A; Super Viking; Engine Induction Air System Obstruction; ATA 7160

After returning from a short flight, the pilot reported the aircraft lost engine power while climbing after takeoff. He was able to maintain control of the aircraft and land safely.

The technician found the engine alternator air door (P/N 191659-10), inside the induction airbox, failed at the hinge. This failure allowed the alternator air door to separate, lodge in the induction system, and partially obstruct airflow to the engine.

The submitter recommended a close examination of the alternator air door hinge for condition and security at 100-hour intervals.

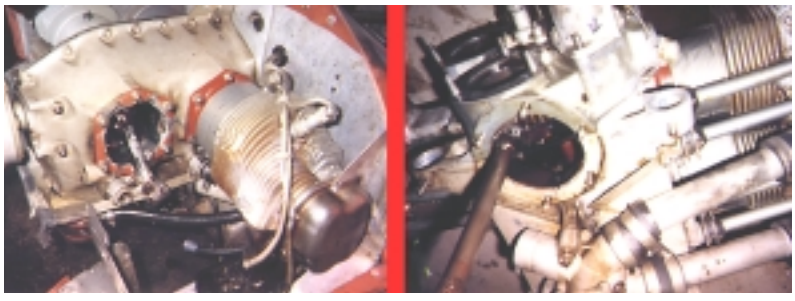
Part total time-600 hours.

CESSNA

Cessna; Model 150L; Engine Damage; ATA 7310

The pilot reported that during a flight, the engine began running rough, got progressively worse, made a loud noise, and failed. He landed the aircraft safely and summoned maintenance personnel. (Refer to the illustration.)

The technician discovered the number 2 cylinder, piston, rod, and wrist pin failed with varying degrees of damage. The cylinder separated from the engine case, the piston was severely heat damaged, the connecting rod was bent, and the wrist pin was galled and heat damaged. He also



found the number 2 cylinder intake boot was dislodged and caused the cylinder fuel/air mixture to become extremely lean and resulted in the damage found. He believes the intake boot became dislodged due to improper positioning of the “worm gear” hose clamp.

Part total time not reported.

Cessna; Model 172R; Skyhawk; Defective Nose Steering; ATA 3251

After a flight, the pilot reported the nose steering system was very poor causing the aircraft to depart the runway.

The technician investigated the incident and found the left and right steering bungees (P/N’s 0543022-1 and –2) were weak. He conducted a pull test on the steering bungees and found actuation began between 20 and 25 pounds. In accordance with the manufacturer’s technical data, new bungee units should begin actuation between 60 and 65 pounds.

Considering the bungees short time in service, the submitter speculated they were defective when installed new. He suggested testing the steering system and bungees during scheduled inspections.

Part total time-440 hours.

Cessna; Model 172S; Skyhawk; Firewall Crack; ATA 5312

During a scheduled inspection, the technician found the firewall (P/N 0553031-3) cracked.

The crack was approximately .75 inch long and began at the lower cowling mount adjacent to the battery box. Cessna Service Bulletin (SB) 98-53-02 pertains to this subject but only applies to 172R models.

The FAA Service Difficulty Reporting data base contains 11 additional similar reports for firewall cracks in the same location. These cracks developed between 199 and 489 hours of operation.

Part total time-559 hours.

Cessna; Model A185F; Skywagon; Defective Tailwheel Bushings; ATA 3222

During an inspection, the technician found the tailwheel bushings severely worn, extruded, and cracked.

The bushings (P/N 0742180-2) were recently installed and should not have been damaged to this extent during their short operating life. Prior to installation, the bushings were obtained new from Cessna, and the submitter speculated they were made of inferior material. This was second set of defective bushings he has found within a week’s time.

Part total time-40 hours.

Cessna; Model TU206A; Stationair; Engine Oil in the Cockpit; ATA 7930

During a flight, the pilot noticed the odor of engine oil in the cockpit and observed oil on the floor in the area of the rudder pedals. The engine oil pressure indication went to zero, and the pilot made an immediate and safe landing.

A repair station technician investigated the incident and found approximately 3 quarts of engine oil on the cockpit floor. The engine oil pressure indication line, located behind the instrument panel, was ruptured. After removing and cleaning the oil line, he discovered evidence of severe corrosion that culminated in failure of the line.

Part total time-4,258 hours.

Cessna; Model 310Q; Fuel Wing Tip Tank Leak; ATA 2810

While conducting a scheduled inspection, the technician turned on the strobe lights and immediately heard a loud explosion on the left wing. He shut off all aircraft electrical power and began an investigation.

The technician discovered the explosion split the left tip tank nose faring, and damaged it beyond repair. The navigation/strobe light is installed in the tip tank nose faring and was identified as the ignition source for the explosion. Investigating further, he discovered “AvGas” provided fuel for the explosion.

The navigation/strobe light is attached to a bracket that is attached to the tip tank access panel by “spot welds.” Fuel fumes were present in the area, but there was no sign of a leak. The technician flexed the navigation/strobe light bracket and fuel began to “weep” from the bracket upper attachment leg spot weld. This finding led him to inspect the right fuel tip tank, and he found the same defect. The Cessna Parts Catalog does not list a part number for the tip tank access panel or the light bracket. The navigation/strobe light installation on this aircraft is a “factory option.”

Airworthiness Directive (AD) 76-08-02, Revision 2, and Cessna Service Letter (SL) ME75-6 pertain to this subject. However, these documents do not address the cracked or broken light bracket spot welds found in this case. Also, this particular navigation/strobe light installation is “excepted” from the requirements of AD 76-08-02 and SL ME75-6 by the “Applicability” statement.

Aircraft total time-10,544 hours.

Cessna; Model 402B; Businessliner; Emergency Exit Failure; ATA 5220

The pilot reported that during flight at 2,200 feet altitude, the emergency escape hatch separated from the aircraft. He was able to land the aircraft safely.

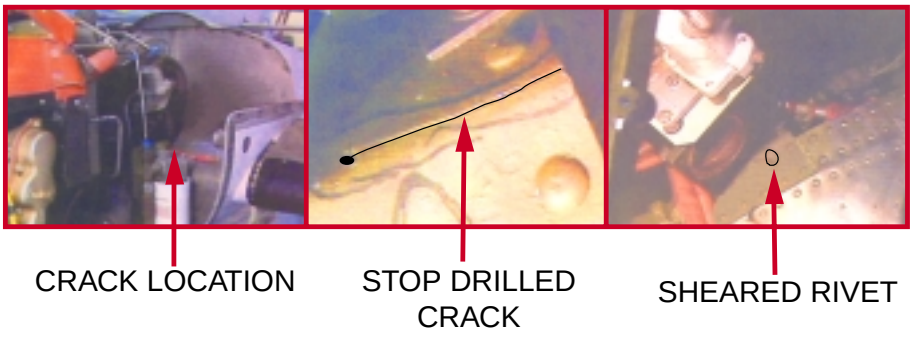
The technician did not find external damage, and the emergency escape hatch (P/N 5211130-2) opening and hatch retention system were not damaged. He speculated the retention pins vibrated out enough to allow separation of the hatch.

Part total time-10,771 hours.

Cessna; Model 421C; Golden Eagle; Nacelle Structural Defect; ATA 5410

While conducting an annual inspection, the technician discovered a crack in the left engine nacelle beam.

The crack was approximately 1.5-inches long and was located on the upper beam cap. (Refer to the illustration.) The crack had been previously "stop drilled," which is not an approved repair. This type of damage requires replacement of the beam assembly. Also, the technician found a sheared rivet in the same area.



The submitter suspects the crack was caused by improper fit during manufacture which imposed abnormal stress. The proximity to the turbocharger waste gate and possible exhaust system leakage may have contributed to the defect.

Part total time-4,520 hours.

Cessna; Model 421C; Golden Eagle; Fuel Tank Security Damage; ATA 2810

During a scheduled inspection, the technician discovered the right nacelle baggage locker fuel tank security was damaged. The 28-gallon nacelle fuel tanks were installed in accordance with Supplemental Type Certificate (STC) SA2872SW.

The fuel tank hold-down fasteners were pulling through the upper wing skin. (Refer to the illustration.) The technician suspected the entire fuel tank installation did not meet industry standards. The technical data associated with the STC was not available in the aircraft records, and he declined to approve the aircraft for return to service. At the time of this report, he was awaiting delivery of the necessary technical data before conducting a conformity inspection.

Part total time not reported.

Cessna; Model 550; Citation; Defective Nose Landing Gear Component; ATA 3220

After a flight, the pilot reported the nose landing gear doors would not properly close.

A technician discovered the torque tube (P/N 5542102-9) for the nose gear doors was damaged. The right end plate of the torque tube had one weld broken, and the other weld was cracked. Due to the short operating time for the torque tube, he speculated the damage occurred when the doors were misrigged.

The submitter recommended giving the torque tube welded end plate close attention during inspections.

Part total time-187 hours.

PIPER

Piper; Model PA 24-250; Comanche; Defective Wing Attachments; ATA 5741

During an annual inspection, the inspector found sheared rivets at both rear wing attachment fittings.

The technician discovered all the rivets on the right side at fuselage station (FS) 136, were sheared. These rivets are used to attach the plate (P/N 23662-00), fitting assembly (P/N 23663-00), and doubler (P/N 23664-02). There was evidence of extensive movement between the plate and fitting assembly, which caused an associated angle (P/N 20554-16) to break. The damage on the left side was much the same, although slightly less severe. Two of the rivets were still intact, and the angle was cracked but not broken.

The submitter did not speculate about the cause of this structural damage. However, he noted this was the second discrepancy involving a like aircraft that he has seen. The other aircraft had damage only on one side that had not progressed to the level of damage found in this case.

Part total time not reported.

Piper; Model PA 24-260; Comanche; Defective Main Landing Gear; ATA 3213

During a scheduled inspection, the technician found the left main landing gear strut “jammed.”

After further investigation, the technician discovered the strut housing (P/N 20752-12) was cracked allowing hydraulic fluid leakage. He did not give the location or extent of the crack and did not list a cause for this defect.

Part total time-6,763 hours.

Piper; Model PA 28R-200; Arrow; Defective Landing Gear; ATA 3230

After takeoff, the pilot was not able to retract the landing gear, and the gear would not return the “down-and-locked” position when selected. He was able to extend the gear using the emergency extension system and made a safe landing.

The technician placed the aircraft on jacks and conducted an operational test of the landing gear system. The landing gear control circuit breaker was open. After resetting the circuit breaker, the gear still would not cycle. He conducted a hydraulic powerpack (P/N 105476) system pressure test. That test confirmed the hydraulic powerpack was not developing sufficient pressure to properly operate the landing gear. After he removed, overhauled, and reinstalled the hydraulic powerpack, the system pressure test was successful.

Part total time not reported.

Piper; Model PA 28-181; Archer; Electrical System Failure; ATA 2420

During a flight, the pilot noticed several high amperage “spikes” followed by loss of output from the alternator.

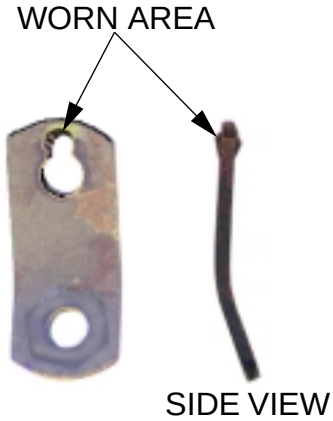
A technician found the alternator (P/N 69670-04), voltage regulator, and the overvoltage relay were all damaged. While conducting a “bench check” on the alternator, he discovered the field terminal lug was arcing to the tip of the rear cooling fan. Abrasions found on all the cooling fan tips, indicated a continuous arcing. He determined the arcing damaged the voltage regulator and the overvoltage relay. He did not determine the cause of the arcing; however, he is working with the alternator manufacturer to resolve this problem.

Part time since overhaul is 53 hours.

Piper; Model PA 31-350; Chieftain; Airworthiness Directive Compliance; ATA 2730

While complying with the requirements of Airworthiness Directive (AD) 98-08-18, the technician discovered an associated defect.

AD 98-08-18 and Piper Service Bulletin 626C deal with inspection and replacement criteria for the elevator down bungee spring and one link. The AD states it may be necessary to replace the existing spring link (P/N 42376-02) with a new link (P/N 71086-03) when the spring is replaced. However, the spring configuration requires a link at each end for attachment. The submitter found the other link (P/N 56981-02) severely worn in an elongated shape at the spring attachment hole. (Refer to the illustration.)



The submitter suggested amending AD 98-08-18 to include replacement of both spring attachment links.

Part total time not reported.

Piper; Model PA 32RT-300T; Turbo Lance; Landing Gear Failure; ATA 3230

During an approach for landing, the pilot selected the landing gear to the “down” position with no response. He heard the hydraulic pump running continuously, but all attempts to lower the gear failed. Just prior to touchdown with the gear up, he turned off the master switch, and the gear attempted to extend.

After a bit of research, the technician found there are two direct current (dc) power solenoids that control hydraulic pump pressure to either the “up” or “down” position. He found the “up” solenoid contactor (P/N 484-373) had arced and applied continuous dc electrical power to the “up” solenoid. Also, the “up” solenoid was stuck, which might have contributed to the problem.

The submitter recommended the establishment of a periodic inspection and replacement schedule for the solenoids.

Part total time not reported.

Piper; Model PA 34-220T; Seneca; Cabin Heater Defect; ATA 2140

The technician selected the cabin heater switch to the “on” position during a scheduled inspection, but the heater ignition did not occur.

The technician discovered that fuel was running from the heater drain and creating a hazardous condition. He determined there was no combustion airflow and no electrical continuity between the combustion air switch (Piper P/N 757-756) terminals. He discovered the combustion air blower motor brushes were extremely short and replaced them. After he replaced the combustion air switch, the system functioned properly.

Part total time-368 hours.

Piper; Model PA 34-200T; Seneca; Inoperative Pitot Heat System; ATA 3410

After returning from a flight, the pilot reported the pitot heat system was inoperative.

A technician investigated the report and discovered the electrical contacts of the pitot heat switch assembly (P/N 587-954), located on the pilot’s control panel, were severely corroded. He speculated the corrosion was caused when moisture from a leaking window was held inside the switch housing.

The submitter recommended sealing all windshields and windows to prevent recurrence of this type defect.

Part total time not reported.

Piper; Model PA 34-200; Seneca; Main Landing Gear Failure; ATA 3211

During a cross-country flight, the pilot made an en route stop for fuel. While taxiing after the landing, the left main landing gear separated from the aircraft.

A technician investigated this incident and speculated it was caused by pre-existing structural cracks in the landing gear. The evidence indicates three of the four attachment points for the rear trunnion aft-fitting assemblies, were previously cracked. When they broke, the fourth attachment point could no longer bear the imposed load.

The submitter recommended a rigorous inspection of all landing gear attachment points at every opportunity.

Part total time-1,994 hours.

Piper; Model PA 46-350P; Malibu Mirage; Wing Flap Binding; ATA 2750

During a scheduled inspection, the technician discovered both wing flaps binding.

The binding occurred while extending from full up to approximately 5 degrees down. While investigating, the technician found the wrong length push rod (P/N 82913-2) was installed as the inboard flap actuation push rod. He confirmed this with the manufacturer's maintenance manual. The incorrect push rod measured 5.26 inches in length.

The submitter could not determine the origin of the push rod or when it was installed.

Part total time-28 hours.

HELICOPTERS

BELL

Bell; Model 47; Main Rotor Blade Grips; ATA 6210

This article was furnished by the FAA Rotorcraft Certification Office (ASW-170) located in Fort Worth, Texas, and appears as it was received.

INTRODUCTION:
The intent of this article is to provide facts and background information on the decisions that resulted in the recent issuance of Airworthiness Directive (AD) 2000-18-51 on the Bell Model 47 helicopter main rotor grips. Ongoing and anticipated future actions will also be discussed. Most of the information provided below was explained in detail during a January 29-30, 2001, meeting between the FAA Rotorcraft Directorate, the National Transportation Safety Board (NTSB), the Experimental Aircraft Association (EAA), the Helicopter Association International (HAI), the Aircraft Owners and Pilots Association (AOPA), and Bell Helicopter

Textron. An effort is also made to answer the most common questions and comments that owner/operators sent to the AD docket file. Note that this information bulletin does not change any AD requirements that are presently in force.

BACKGROUND:

There have been four accidents resulting from main rotor grip failures since the certification of the Model 47. All of the failures can be traced to cracks originating in the grip threads. The first two accidents occurred in the United States in 1971 and 1972. One resulted in a fatality. An AD was issued in 1973 as a result. The third accident occurred in Australia in 1985. The Australian government subsequently conducted a study of grips from Australian operators using eddy current inspection techniques. Cracks were discovered in 60 percent of that sample. Flight time ranged from a low of 1,996 hours to a high of 5,000 hours. The Australian report concluded that the "fatigue cracking problem is significant and widespread." As the aviation authority of original type certification, the FAA considers worldwide service difficulty information when making continued operational safety decisions. Bell and the FAA reviewed the Australian data along with existing U.S. crack data and internal Bell engineering data. Bell subsequently issued a service bulletin stating that the grips should be retired at 1,200 hours versus the original 2,500 hours for wood blade grips and 5,000 hours for metal blade grips. Considering that all the failures occurred at more than 1,200 hours, and in consideration of the expected hardship on operators if the service life on the grip was reduced, the FAA issued an AD in 1986 that left the life limit on the part at 2,500/5,000 hours, but imposed a recurrent inspection cycle. The 1986 AD required dye penetrant inspection.

In 1998 a fourth accident occurred in Canada as a result of blade grip failure. According to the available records, the parts were very low time (approximately 200 hours). The FAA obtained a copy of a Canadian laboratory report, which cited cracking in the threads on both grips. Given the very low time on these parts, the FAA made a conscious decision to wait for more definitive information from Transport Canada regarding the records on these parts. In the interim, the FAA and Bell began another detailed review of service difficulty reports and field service data. Some 70 cracked grips had been formally reported since original type certification of the Model 47.

The Bell Model 47 main rotor blade grips were originally designed and qualified as "safe life" parts. During the certification testing, the fatigue strength of the grip was established by cycling several parts to failure in a laboratory test rig. The time of failure was then subjected to a "knockdown factor". A typical knockdown factor for a critical part is at least four. So, if the grip theoretically failed at 20,000 hours on the test rig, the field service life would be set at approximately 5,000 hours, or less. It is important to understand that the underlying premise of safe life assumes that the part will not fail within its published life limit. Following the 1985 failure and with evidence from the 1986 analysis that grips were cracking, Bell correctly reduced the safe life on the part. In its efforts to soften the impact on operators, the FAA introduced recurring inspections that in effect replaced safe life with dye penetrant inspections. The part apparently does have a degree of damage tolerance, and the FAA believed that inspections would detect a crack before it reached critical dimension and failed. Unfortunately, we do not know how damage tolerant the part is because a crack growth analysis was never done. The FAA recently asked Bell to

conduct a crack growth test on a grip that is known to have a crack at 1,196 hours time in service. It is noteworthy that the crack in this particular grip was missed by a dye penetrant inspection and later discovered using eddy current.

Initially the FAA had some questions regarding the records for the grips involved in the 1998 Canadian accident. Inquiries were made to Transport Canada and in June 2000, Transport Canada notified the FAA that the logbook records for the 1998 accident aircraft appeared to be accurate. In October 2000, the Transportation Safety Board of Canada issued a report that stated, in part, that "the helicopter was certified, equipped, and maintained in accordance with existing regulations and approved procedures." Considering this accident, the lack of crack growth data on the grips, and the growing body of evidence that these 2,500/5,000 hour "safe life" parts continue to develop cracks, in a number of cases at less than 1,200 hours, the FAA issued AD 2000-18-51. A recent operator survey conducted by the EAA indicates that a grip was found with a crack of nearly 2 inches in length as a result of the AD. The operator commented that the AD "saved my life."

Operators have asked if there is a trend in the data that might isolate cracked grips to a specific type of operation, vendor, production lot, or type of rotor blade. Unfortunately, there is no discernible trend. Speculation that the parts are only failing in Australia or Canada is not supported by the data, either before or after the AD.

The interim inspections required by the AD are intended to deal with the documented instances of grips cracking at less than 1,200 hours. In order to help mitigate the inspection requirement, the FAA has asked Bell to conduct crack growth testing. The testing could show that if a crack were to start prior to the 1,200 hour life limit, the crack would not grow to a critical length (failure) prior to part retirement. Conversely, it could show less desirable results. Testing will be completed in October 2001, but interim results will be available in the June timeframe.

Dye penetrant inspection of the thread area has not been totally effective. Eddy current inspection has been found to be more reliable in detecting cracks in threads. The fine threads in the grip and the limited inspection area combine to reduce the effectiveness of dye penetrant. There have been a number of instances where cracks not discovered by dye penetrant were detected by eddy current. The FAA is considering revising the AD in the near future to require eddy current inspection. Prior to revising the AD, an eddy current inspection procedure that can be conducted in the field will be developed.

Another concern is parts availability. Although grossly underestimating the parts shortage when issuing the most recent AD, the FAA took immediate action when the scope of the problem became apparent. Alternate method of compliance (AMOC) authorizations were issued to AD 2000-18-51 extending the service life of the part from 1,200 to 2,500 hours with additional recurring inspections. The lack of engineering analysis combined with known crack/failure data does not support extending the life limit beyond that permitted by the current AMOC. Part availability remains limited due to the amount of special tooling that is presently available to manufacture the grip. Bell is looking at ways to provide more tooling to increase production. "Original design" grips should begin to enter the supply system in late March. Additionally, there is a possibility that Parts Manufacturer Approval

(PMA) grips might supplement Bell's production. The new "original design" parts will be subject to AD action until results of crack growth testing are available. Improved grip and adapter nuts are tentatively planned for production release by late summer. Bell is not seeking a life limit extension for the improved parts but anticipates that process changes combined with crack growth testing will convince the FAA to eliminate recurring inspections. The improved grip and adapter nut will have new part numbers.

The FAA tentatively plans to revise AD 2000-18-51, probably with a superceding action. Actions that were proposed by the FAA and tentatively agreed upon by the participants at the January 29-30, 2000, meeting include the following:

1. Eddy current should be the required inspection method in the superceding AD.

2. Operators should be encouraged to perform an eddy current inspection as soon as possible even though time credit may be given for a dye penetrant inspection that was conducted under the original AD.

3. The AMOC retirement life of 2,500 hours should be retained until parts supply meets demand. At that point, the life of the part should be reduced to 1,200 hours. (Bell Helicopter recommends all grips be retired at 1,200 hours.)

4. The FAA will revisit the 1998 Canadian accident by contacting Bell and the Canadian authorities. Additional documented information that has a bearing on this issue will be considered during future actions.

5. The FAA will consider any additional data that might support changing the inspection interval to 300 hours.

6. The superceding AD will require reporting of cracked grips to the FAA.

7. The FAA and industry groups will assemble a list of NDI inspection facilities that can perform the new eddy current inspections.

The FAA hopes that this information provides some additional background for the Bell Model 47 operators. Progress reports are planned as new information becomes available. Rotorcraft Directorate representatives will be at the HAI Heli-Expo and tentatively plan to be at the EAA AirVenture 2001, in Oshkosh to address concerns directly with operators.

FOR FURTHER INFORMATION CONTACT:
Mr. Carl Mittag, Manager, FAA Rotorcraft Certification Office, Federal Aviation Administration, Fort Worth, Texas, 76193-0170; telephone: (817) 222-5170; e-mail <carl.f.mittag@faa.gov>.

BELL

The FAA Rotorcraft Certification Office (ASW-170) located in Fort Worth, Texas, furnished this article.

MAKE: Bell Helicopter Textron
PART: Tail Rotor Blades, Part Numbers 212-010-750-009, -011, -105, -107, -109, or -111, with serial number prefix ATR or A3 or serial number A-11529 and prior.
MODEL: All 205A, 205A-1, 205B, 212, 412, 412EP, and 412CF Helicopters
TEXT: Bell Helicopter Textron has issued Alert Service Bulletins 205-00-80, 205B-00-34, 212-00-111, 412-00-106, and 412CF-00-13, Revision A, dated December 20, 2000.

The manufacturer has recently investigated the in-flight loss of a tip block for a 212-010-750-105 tail rotor blade. The investigation has revealed that the countersunk screws retaining the tail rotor tip block were installed incorrectly resulting in inadequate tip block retention. The possibility of poor adhesive bond allowing for voiding and eventual closure loss was also discovered.

Bell Helicopter Textron has released Alert Service Bulletins 205-00-80, 205B-00-34, 212-00-111, 412-00-106, and 412CF-00-13, Revision A, dated December 20, 2000. The bulletins impose procedures for the inspection of the tail rotor blade tip area and the installation of shear pins and rivets for the tip block and tip closures. The affected tail rotor blades are listed under different part numbers and interchangeable for the Bell Model 205A, 205A-1, 205B, 212, 412, 412EP, and 412CF helicopters.

BELL

The FAA Rotorcraft Certification Office (ASW-170) located in Fort Worth, Texas, furnished the following article.

MAKE: Bell Helicopter Textron
PART: Tail Rotor Crosshead 214-010-806-105
MODEL: All 214ST Helicopters
TEXT: Bell Helicopter Textron has issued Alert Service Bulletin 214ST-00-82 dated July 12, 2000.

A model 214ST helicopter experienced fracture of one of the counterweight bellcrank journals on the tail rotor crosshead, part number 214-010-806-105. The fracture occurred in the threaded portion of the journal and resulted in loss of the complete counterweight bellcrank. Investigation by the operator revealed a second crosshead with cracks in the threads of one of its journals as well.

Bell Helicopter Textron has issued Alert Service Bulletin (ASB) 214ST-00-82 dated July 12, 2000. The ASB requires a one-time inspection of the crosshead to determine the breakaway torque of the counterweight bellcrank retaining nuts and to perform

a fluorescent penetrant inspection of the crosshead counterweight bellcrank journals for cracks. The fractures in the journals of the crossheads may have been the result of inadequate or loss of torque on the counterweight bellcrank retaining nuts.

ERICKSON

Erickson; Model S64E; Landing Gear Structural Defects; ATA 3210

While conducting scheduled maintenance, the technician removed the main landing gear assemblies (P/N 6425-50100-013 and –14) for overhaul.

During the overhaul process, the technician conducted a magnetic-particle inspection. The inspection revealed one of the gears had 15 linear cracks that were not detected visually. The cracks were located on the upper collar housing and measured .093 to .36 inch in length. A similar inspection on the other gear revealed seven cracks in the same area that measured .171 to .531 inch in length.

The submitter did report the cause of these defects. He suggested conducting nondestructive inspections on the gear assemblies at frequent intervals.

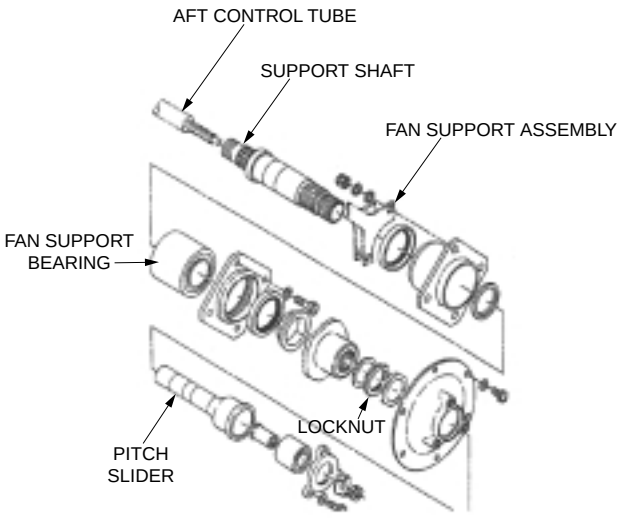
Part total time not reported.

McDONNELL DOUGLAS

McDonnell Douglas; Model MD600N; NOTAR; Antitorque Fan Assembly Corrosion; ATA 6720

While removing the No Tail Rotor (NOTAR) fan bearing, the technician discovered pitting corrosion on the fan pitch slider (P/N 500N5367-3) and the fan support shaft (P/N 500N5357-11). (Refer to the illustration.)

When the technician replaced the bearing, fan pitch slider, and the fan support shaft, he noticed excessive binding on the assembly. He consulted an onsite manufacturer's technical representative and was told the required torque of 60 to 70 foot-pounds applied to the pitch support shaft locknut (P/N NAS1493-6F) was excessive and was the major cause for the binding. It was obvious to the onsite representative that 60 to 70 foot-pounds of torque caused the support shaft to stretch, thereby reducing the inside diameter and creating the binding condition. By reducing the applied torque by 5 pounds at a time, they were able to determine



the ideal torque application was approximately 45 to 55 foot-pounds. This torque range, although effective in greatly reducing the binding condition of the slider, is not an approved procedure.

The manufacturer is aware of this situation, and a change of the technical data may be forthcoming. Any questions concerning this subject should be addressed to the manufacturer.

Part total time-601 hours.

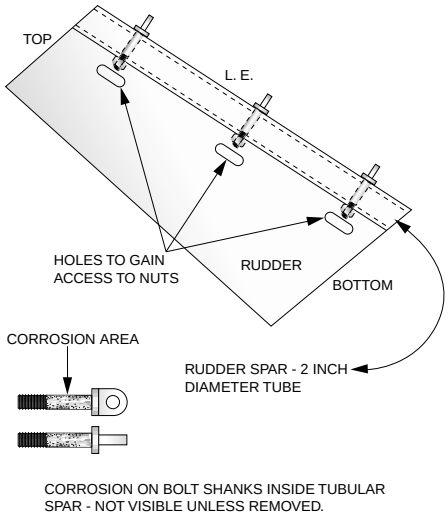
AMATEUR, EXPERIMENTAL, AND SPORT AIRCRAFT

AEROCOMP

Aerocomp; Model Compair-6; Defective Rudder Security; ATA 5540

During an annual inspection, the technician found the rudder hinge bolts (three) loose.

After the technician removed the rudder, the hinge bolts (P/N AN43B) rotated freely. He spoke with the manufacturer regarding a procedure to access and tighten the rudder hinge bolt nuts and was instructed to cut holes in the rudder skin. (Refer to the illustration.) After gaining access to the area, he discovered severe corrosion on the middle and lower hinge bolts and somewhat less severe corrosion on the upper hinge bolt.



Personnel involved in operating and maintaining these aircraft should check all the flight control hinge bolts for security at every opportunity.

Part total time-206 hours.

MUSTANG

Mustang; Mustang II; Engine Discrepancy; ATA 8530

This aircraft is equipped with a Textron Lycoming Model O-320 engine.

During an annual condition inspection, the inspector found the engine compression low on the number 1 cylinder.

The inspector removed the cylinder and discovered one of the piston pin plugs was missing and the other plug was worn to a “tapered form.” The piston pinhole was severely elongated and contained aluminum “metal nuggets.” The oil filter and suction

screen also contained a large amount of metal. This led to a close inspection of the other cylinders where he discovered similar wear. Even though the engine had accumulated a considerable number of operating hours, the wear found seems exceptional.

The aircraft owner used Phillips 20/50-grade engine oil and switched between 89-octane autofuel and 100 low-lead aviation fuel.

Part total time-1,700 hours.

RAND ROBINSON

Rand Robinson; Model KR-2; Engine Failure; ATA 7414

This aircraft incorporates a Volkswagen Model 2100 (Revmaster) engine that has been modified for aircraft use.

During a flight, the aircraft lost engine power, and the pilot attempted an emergency landing. On final approach for landing, the engine failed completely, and the pilot landed 10 feet short of the runway.

The technician investigated the problem and discovered the magneto (Bendix TCM, Model D4RN3000, P/N 10-682555-12) failed. After disassembling the magneto, he discovered the cam follower melted which caused the points not to open. He speculated that excessive heat from the bearing, due to lack of lubrication, caused the cam follower to melt.

The magneto manufacturer recommends overhauling these units during engine overhaul or every 4 years. This magneto was installed new when the aircraft was certified in 1992. There was no indication it had ever been removed or had maintenance performed since that time.

The submitter recommended strict adherence be given to the manufacturer's recommended overhaul schedule.

Part total time-488 hours.

POWERPLANTS AND PROPELLERS

TEXTRON LYCOMING

Textron Lycoming; Models Numerous; Oil Pump Airworthiness Directive; ATA 8550

The FAA issued Airworthiness Directive (AD) 96-09-10, dated July 15, 1996, which supersedes AD 81-18-04, Revision 2. Both documents concern replacement of the aluminum oil pump impeller and shaft assembly with a hardened steel impeller and shaft assembly.

AD 96-09-10, paragraph (c), requires replacement of these parts at the next engine overhaul (not to exceed the "Time Between Overhaul" (TBO)) for each particular engine model listed in Service Instruction 1009AJ, at the next oil pump removal, or 5 years after the effective date of the AD whichever occurs first.

Also, everyone should be aware that the requirements of AD 96-09-10 DO NOT APPLY to some Textron Lycoming aluminum oil pump impellers (P/N 60747). These earlier style oil pumps incorporate an aluminum impeller with a fixed shaft secured with a cotter pin and a two-piece oil pump housing. The nonapplicability of the impeller part number mentioned above is explained in Amendment 39-9586 of which AD 96-09-10 is a part. Any questions regarding this disparity should be addressed to the contact information listed in the last paragraph of AD 96-09-10. A copy of Amendment 39-9586 may be obtained from the internet by accessing the "Federal Register Online."

This information is published to remind maintenance personnel that the 5-year time limit expires on July 15, 2001. Therefore, during engine inspections and maintenance, the technician should verify compliance with AD 96-09-10 has been accomplished prior to expiration of the time limit.

Part total time as stated above TBO.

Textron Lycoming; Model O-360; Cylinder Failure; ATA 8530

This engine is used in a Piper, Model PA 28-181 aircraft.

The submitter stated this was the sixth like engine cylinder (P/N AEL65102-12) failure he has discovered. All the cylinders failed in the same way. The failures occurred between 300 and 1,081 operating hours and involved O-320 and O-360 engines.

These failures involved a crack running from the top sparkplug hole, around the exhaust valve seat, and then to the lower sparkplug hole. (Refer to the illustration.) If this defect is not found quickly, the cylinder will split into two pieces resulting in further engine damage.

At the time of this report, the submitter had not determined a cause for the cracked cylinders.

Part total time-1,081 hours.

ACCESSORIES

DEFECTIVE MAGNETO CONTACT ASSEMBLIES TCM/BENDIX

During an engine run-up prior to takeoff, the flightcrew noticed an excessive RPM drop while checking the magnetos. The planned flight was aborted, and the crew taxied the aircraft back to the parking ramp.

While investigating, the technician discovered the cam follower on the magneto contact assembly was misaligned. Also, one of the two rivets holding the cam follower to the contact assembly was missing, and the other rivet was loose. The contact assembly was an FAA/PMA approved part.

Since the original report in September 2000, this repair station has found loose rivets on 12 additional contact assemblies. The suspect contact points are easily identified by the "AB" prefix preceding the part number. These failures occurred between 50 and 400 operating hours. The rivets of one contact assembly were found loose during a receiving inspection.

Part total time-384 hours.

AIR NOTES

SUBSCRIPTIONS

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ELECTRONIC VERSION OF MALFUNCTION OR DEFECT REPORT

One of the recent improvements to the AFS-600 Internet web site is the inclusion of FAA Form 8010-4, Malfunction or Defect Report. This web site is still under construction and further changes will be made; however, the site is now active, usable, and contains a great deal of information.

Various electronic versions of this form have been used in the past; however, this new electronic version is more user friendly and replaces all other versions. You can complete the form online and submit the information electronically. The form is used for all aircraft except certificated air carriers who are provided a different electronic form. The Internet address is:

http://av-info.faa.gov/isdr/

When the page opens, select “M or D Submission Form” and, when complete, use the “Add Service Difficulty Report” button at the top left to send the form. Many of you have inquired about this service. It is now available, and we encourage everyone to use this format when submitting aviation, service-related information.

SERVICE DIFFICULTY PROGRAM DATA ON THE INTERNET

The FAA, Service Difficulty Reporting (SDR) Program is managed by the Aviation Data Systems Branch, AFS-620, located in Oklahoma City, Oklahoma. The information supplied to the FAA in the form of Malfunction or Defect Reports, Service Difficulty Reports, or by other means, is entered into the SDR data base. This information has been available to the public through individual written request. This method has provided the aviation public with an invaluable source of data for research or finding specific problems and trends.

The Service Difficulty Reporting Program relies on the support of the aviation public to maintain the high quality of data. AFS-620 has included the SDR data on an Internet web site, which is now available to the public. Using the web site will expedite the availability of information. The Internet web site address is:

http://av-info.faa.gov

On this web site, select “Aircraft” along the top of the page, next select “Service Difficulty Reporting,” and then select “Query SDR Data.”

This web site is now active; however, it is still under development and improvements are being made. We ask for your patience, ideas, and suggestions. If you find the web site useful, let us know. Also, spread the word about the availability of information on the web site. To offer comments or suggestions, you may contact the web master or call Tom Marcotte at (405) 954-4391.

Please remember that the information contained in the SDR data base is only as good as the input we receive from the aviation public. Also, the data used in production of this publication is derived from the SDR data base. In that regard, we solicit and encourage your participation and input of information.

This publication, as well as many other publications, was previously included on the “FedWorld” internet site. The FedWorld site was terminated on April 15, 2000. The data previously listed there is presently being transferred to the “av-info” web site.

ADDRESS CHANGES

In the past, the Designee Standardization Branch (AFS-640) maintained the mailing list for this publication. Now, the Government Printing Office (GPO) sells this publication and maintains the mailing list; therefore, please send your address change to:

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710 N. Capital Street N. W.
Washington, DC 20402

You may also send your address change to GPO via FAX at: (202) 512-2168. If you FAX your address change, please address it to the attention of: **SSOM, ALERT-2G**.

Whether you mail or FAX your address change, please include a copy of your old address label, and write your new address clearly.

IF YOU WANT TO CONTACT US

We welcome your comments, suggestions, and questions. You may use any of the following means of communication to submit reports concerning aviation-related occurrences.

Editor: Phil Lomax (405) 954-6487
FAX: (405) 954-4570 or (405) 954-4748

Mailing address:
FAA
ATTN: AFS-640 ALERTS
P.O. Box 25082
Oklahoma City, OK 73125-5029

E-Mail address:
<Phil_W_Lomax@mmacmail.jccbi.gov>

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AVIATION SERVICE DIFFICULTY REPORTS

The following are abbreviated reports submitted between January 23, 2001, and February 16, 2001, which have been entered into the FAA Service Difficulty Reporting (SDR) System data base. This is not an all inclusive listing of Service Difficulty Reports. For more information, contact the FAA, Regulatory Support Division, Aviation Data Systems Branch, AFS-620, located in Oklahoma City, Oklahoma. The mailing address is:

FAA
Aviation Data Systems Branch, AFS-620
PO Box 25082
Oklahoma City, OK 73125

These reports contain raw data that has not been edited. If you require further detail please contact AFS-620 at the address above.

FEDERAL AVIATION ADMINISTRATION

Service Difficulty Report Data

Sorted by Aircraft Make and Model then Engine Make and Model. This Report Derives from Unverified Information Submitted By the Aviation Community without FAA review for Accuracy.

ACFT MAKE	ENG MAKE	COMP MAKE	PART NAME	PART CONDITION	DIFF-DATE	T TIME
ACFT MODEL	ENG MODEL	COMP MODEL	PART NUMBER	PART LOCATION	OPER CTRL NO.	TSO
REMARKS						
	CONT		GEAR	MISMANUFACTURE	04/20/2000	
	TSIO360EB		654720	OIL PUMP	20000515SH009	
NEW OIL PUMP DRIVEN GEAR DOES NOT HAVE THE CHAMFER ON THE INSIDE OF THE TWO DRIVE SLOTS. THIS IS A MFG''S DEFECT. WHEN THE DRIVE IMPELLER NR 653814 IS INSTALLED, AND TACH NUT TORQUED, THE NR 654720 GEAR BOTTOMS ON THE 2 RADIUSES OF THE DRIVE DOGS THAT ENGAGE THE SHOTS. A .0015 INCH FEELER GAUGE CAN BE INSERTED UNDER THE GEAR SHAFT WHEN ASSEMBLED. THIS CAUSES STRESS ON THE RADIUSES OF THE NR 653814 IMPELLERS AND CAN CAUSE A FAILURE OF THE OIL PUMP SYSTEM IF IT WEARS OR CRACKS IN THAT AREA BECAUSE THE TACH NUT WILL LOOSE ITS TORQUE AND THE WHOLE OIL PUMP DRIVE SYSTEM WILL LOOSEN. REF: TCM SB 96-4.						
	GE	GE	BLADE	FRACTURED	06/28/2000	712
	CF7002D2			ENGINE	20000712SH044	
TWO EACH STAGE 1 TURBINE BLADES FRACTURED AND LIBERATED THE TOP ONE-THIRD OF THE AIRFOIL CAUSING DAMAGE TO THE 2ND STAGE BLADES AND AFT FAN SECTION. SUBMITTER STATED INSUFFICIENT INSPECTION INFORMATION EXISTS I N THE ENGINE MANUAL TO DETECT THINNING/NECKING OF THE AIRFOIL SECTION DUE TO CREEP AND/OR OXIDATION AND/OR EROSION. THINNING OF THE BLADE AIRFOIL CROSS-SECTION RESULTS IN BLADE						
	LYC		FLOAT	DAMAGED	11/07/2000	
	O540J3C5		666943	CARBURETOR	20001222SH001	142
CARBURETOR FLOAT FILLED UP PART WAY WITH AVIATION FUEL CAUSING VERY RICH FUEL MIXTURE REDUCING ENGINE POWER. (X)						
AEROSP	ALLSN		SPRING	BROKEN	12/01/2000	
AS355F1	250C20F		355A57247221	GOV RETENTION	20001220SH008	
DURING ROUTINE FLIGHT, PILOT EXPERIENCED A RAPID YAW TO THE RIGHT. NR 2 ENGINE, SN CAE-840415, SPOOLED DOWN TO FLIGHT IDLE AS THE RESULT OF THE NR 2 ENGINE GOVERNOR RETENTION SPRING FAILURE. GOVERNOR RETENTIONS SPRING WAS REPLACED. AIRCRAFT RETURNED TO SERIVCE. (X)						
AEROSP			MOUNT	CORRODED	02/25/2000	3235
AS365N2			365A51103300	ENGINE	20000710SH012	
AIRFRAME ENGINE MOUNT IS CRACKED IN TWO PLACES BEYOND LIMITS FOR REPAIR IAW MANUFACTURER''S MM. CRACKS OCCURRED AT FASTENING HOLE AREAS. REPLACED WITH NEW PART. (X)						
AMD	GE	GE	IGNITION LEAD	SEPARATED	06/13/2000	
FALCON20	CF7002D2	CF7002D2	37C311098P101	ENGINE	CA000713008	
(CAN) DURING ROUTINE MAINTENANCE, THE IGNITION LEAD WAS REMOVED FROM THE IGNITOR PLUG TO FACILITATE REPLACEMENT OF THE PLUG. IT WAS NOTED THAT THE LEAD WAS STUCK IN THE PLUG. REMOVAL OF THE LEAD CAUSED THE PIN TO BECOME DETECHED FROM THE ASSEMBLY. THE LEAD WAS REPLACED WITH A NEW SERVICEABLE UNIT, NO FURTHER ACTION TAKEN.						
AMRGEN			MUFFLER	DETERIORATED	12/11/2000	1317
AA5A				EXHAUST	20001228SH001	
DURING AN ANNUAL INSPECTION, THE MUFFLER ASSY WAS FOUND TO HAVE ITS WALLS SEVERELY DETERIORATED AND THE BAFFLES LOOSE.(X)						
AMTR			AXLE	FAILED	09/02/2000	47
F2SPECIAL				LT WHEEL	20001227SH032	
ON LANDING, LEFT AXLE FAILED CAUSING AIRCRAFT STRUT TO DIG INTO GRASS FIELD. AIRCRAFT FLIPPED ON ITS BACK CAUSING SUBSTANTIAL DAMAGE. PRELIMINARY INSPECTION INDICATED A FAILED WELD ON THE AXLE TO STRUT BRACKET. (X)						

BEECH	CONT		BEARING	DELAMINATED	12/18/2000	8
95A55	IO470L		630826	CONNECTING ROD	20001229SH008	

ENGINE WAS DISASSEMBLED FOR PROPELLER STRIKE INSPECTION, FOUND NR 6 ROD BEARING SURFACE MATERIAL DELAMINATING FROM BEARING EXPOSING BABBITT MATERIAL AND REMAINING BEARINGS SHOWING SIGNS OF THIS CONDITION FORMING ON THEM. ALL BEARINGS WERESENT TO TELEDYNE CONTINENTAL MOTORS FOR ANALYTICAL INSPECTION. THESE BEARINGS WERE REMOVED FROM A TELEDYNE CONTINENTALMOTORS FACTORY REMANUFACTURED WITH 8.3 TOTAL HOURS AND 12 MONTHS FROM INSTALLATION DATE. (X)

BEECH		FIRE DETECTOR	MALFUNCTIONED	11/28/2000	
B200		473275	RT ENGINE	T58A20001127	

RIGHT ENGINE FIRE LIGHT ILLUMINATED DURING INITIAL CLIMB-OUT. RIGHT ENGINE WAS SECURED, AND THE FIRE LIGHT REMAINED ILLUMINATED. RIGHT ENGINE FIRE EXTINGUISHER WAS THEN DISCHARGED AND ABOUT 2 MINUTES LATER THE FIRE LIGHT EXTINGUISHED. UPON LANDING, ENGINE WAS INSPECTED, AND IT WAS DETERMINED THERE WAS NO FIRE, IN ADDITION, THE FIRE DETECTION SYSTEM OPERATIONALLY CHECKED OK. (X)

BEECH	PWA	GODFREY	SEAL	LEAKING	12/14/2000	1884
B90	PT6A20			SUPERCHARGER	20001222SH007	

PILOT ABORTED FLIGHT DUE TO SMELL OF SMOKE IN CABIN. FOUND SUPERCHARGER SEAL LEAKING OIL INTO AIRCRAFT SILENCER. THISMIXTURE OF OIL AND BLEED AIR CAUSED SMOKE TO ENTER CABIN. (X)

BEECH		ATTACH	CRACKED	12/01/2000	3475
E55		9661000668	ELEV TRIM TAB	20001219SH011	

STEEL HORN WITH BRAZED IN BUSHING CRACK ON HORN ONLY NOT INTO BUSHING. CAUSE UNKNOWN. (X)

BELL		BULKHEAD	CRACKED	08/22/2000
206B			FUSELAGE	20001018SH005

BIL - DISCOVERED RIGHT BULKHEAD AT STA 385.6 CRACKED WHILE PERFORMING OTHER MAINTENANCE. CRACKED APPROXIMATELY 80 PERCENT THROUGH INBOARD TO OUTBOARD NEAR LOWER ATTACH TO THE LEFT BULKHEAD. REMOVED AND REPLACED THE RIGHT BULKHEAD, PN 2612052-6, AT STA 385.6 PER THE IPC AND SRM. INITIATED FAA

BELL		STATIC LINE	FAILED	03/22/2000
206B		206070895033	PITOT SYS	20000601SH012

PILOT REPORTED AIRSPEED INDICATED LOW AT CRUISE. FOUND THAT LANDING LIGHT CHAFED A HOLE IN THE PITOT STATIC LINE (IPC REF: FIG 95-7, PAGE 28 ITEM 16). REPLACED TUBE AND REPOSITIONED AS NOT TO CHAFE. (X)

BELL	GLOBE	BEARING	BINDING	07/11/2000	
206B		251401501299	ENGINE BAY	20000804SH005	

LINEAR ACTUATAORS, PN 206-062-721-001 AND 721-109 FAILED PREMATURELY DUE TO OVERSTAKING OF BEARING ROD END P/N 251401501299 CAUSING BEARING TO BE TIGHT AND BINDING WHERE ADJUSTMENTS ARE MADE. ACTUATOR MOTOR IS NOT STRONG ENOUGH TO OVERCOME BEARING STIFFNESS. SUBMITTER SUGGESTED USING BRG WITH LESS BREAK FREE FORCE,THAT IS NOT STAKED SO TIGHT TO ALL FREE MOVEMENT OF BRG AND LINEAR ACTUATOR.

BELL		SHAFT	WORN	06/19/2000	2976
206B3		206040221003	FREEWHEEL UNIT	20000911SH003	

DURING OVERHAUL INSPECTION, DISCOVERED BEARING OUTBRACE HAD ROTATED IN HOUSING. EXCESSIVE WEAR IN HOUSING INSIDE DIAMETER. WILL C/W BELL TECH BULLETIN 206-95-155 THAT INSTALLS SLOTTED OUTER SHAFT WITH KEYED BEARING WHICH IS TO CORRECT THE BEARING ROTATION PROBLEM. (X)

BELL		DRAIN LINE	CRACKED	10/09/2000	6964
206L1		206061505109	ENGINE OIL TANK	20001113SH008	

OIL TANK DRAIN VALVE DISCOVERED WET DURING 100-HR INSP. NO STATIC LEAKS NOTED AFTER CAREFUL INSP, ALTHOUGH A SMALL SEEP WAS FOUND DURING ACFT RUN-UP. SMALL STRESS CRACKS FOUND WITH 10X MAGNIFYING GLASS WITHIN THE RADIUS BETWEEN DRAIN FITTING AND TANK BOTTOM SHEET METAL ADJACENT TO WELDED AREA. SUBSEQUENT PRESS TEST ON THIS TANK SHOWED THE LEAK WOULD OCCUR WITH LESS THAN 3 POUNDS OF PRESSURE. THESE STRESS CRACKS POSSIBLY WERE CAUSED BY 20 YEARS OF OIL CHANGES, AND THE CLOSE PROXIMITY OF SCAVENGE OIL FILTER TO THE DRAIN VALVE. SUBMITTER RECOMMENDED VERYIFYING OIL TANK DRAIN HOSE DOES NOT COME IN CONTACT WITH SCAVENGE FILTER HOUSING, AND CARE USED DURING REMOVAL OF AIRFRAME

BELL		SHAFT	DAMAGED	12/04/2000
206L3		206040320015	COOLER BLOWER	20001220SH001

PILOT REPORTED AIRCRAFT MAKING UNUSUAL NOISE. ON INSPECTION, FOUND FORWARD BEARING RETAINING NUT ON OIL COOLER BLOWER SHAFT HAD LOST TORQUE. LOCKING WASHER WAS FULLY ENGAGED AND INTACT, ON DISASSEMBLY, FOUND AFT FACE OF BEARING INNER RACE GROOVED AND DAMAGED BEYOND LIMITS. BOARING INNER RACE HAD ROTATED ON SHAFT CAUSING WEAR ON SHAFT JOURNAL IN EXCESS OFLIMITS. REPLACED SHAFT, BEARING, NUT AND LOCKING WASHER. (X)

BELL		STRUCTURE	CRACKED	11/19/1999	8270
206L3		206020113129	VERTICAL FIN	20000712SH006	

CRACK ON UPPER PORTION OF LEFT SIDE. CRACK TRAVELED ALMOST THE ENTIRE LENGTH OF FIN. THE FIN WAS REMOVED FROM SERVICE. A REPLACEMENT FIN WAS ORDERED. (X)

BELL		NUT	OVERTORQUED	07/06/2000	608
206L3		206040047001	INPUT ADAPTER	20000718SH005	

MECHANIC REPORTED THE M/R TRANSMISSION INPUT SHAFT ADAPTER RETAIING NUT SEEMED TO BE OVERTORQUED ON INSTALL OR PREVIOUSMAINTENANCE. ESTIMATED TORQUE WAS AT LEAST TWICE THE BHT M.M. SPEC FOR THAT PART. ADAPTER AND NUT MAGNAFLUXED FOR DEFECTS, NONE FOUND. SUBMITTER RECOMMENDED SAME ACTION IF OTHER OPERATORS ENCOUNTED THIS PROBLEM. (X)

BELL		BLADE	CORRODED	06/11/2000	3428
206L3		206015001107	MAIN ROTOR	20000718SH013	

DURING DAILY INSPECTION, FOUND HEAVY INTERGRANULAR CORROSION ON TRAILING EDGE EXTRUSION. (X)

BELL		EXHAUST PIPE	CRACKED	06/15/2000	8665
206L3		206064300005	ENGINE	AC2A0000052	49

STACK IS CRACKED OUT WITH ONLY 48 HOURS. REPLACED PART. (X)

BELL	ALLSN		LINE	BROKEN	08/29/2000	7879
206L3	250C30P		23064620	ENGINE ANTI-ICE	20000907SH017	

WHEN TROUBLESHOOTING THE ENGINE ANTI-ICE SYSTEM, FOUND THE AIR LINE BETWEEN THE SOLENOID VALVE AND AIR VALVE HAD A BROKEN FLARE AT THE AIR VALVE END. THE BROKEN PIECE OF THE FLARE CAME OFF WHEN THE AIR LINE B-NUT WAS REMOVED. 7,879.4 HOURS ACTT

BELL BELL CHANNEL CRACKED 08/29/2000 4700
206L4 206031314037 FUSELAGE 20000920SH008
FOUND .8750 INCH CRACK ON LEFT UPPER TAILBOOM ATTACHMENT CHANNEL DURING A ROUTINE 100 HOUR INSPECTION. THE CRACK WAS ONLY VISIBLE WITH REMOVAL OF THE TAILBOOM ACCESS PANEL AND THE USE OF AN INSPECTION MIRROR. THE CAUSE OF THE CRACK IS NOT YET DETERMINED. (X)
BELL ALLSN B-NUT LOOSE 10/24/2000
206L4 250C30P FUEL CONTROL 20001113SH007
AIRCRAFT WAS LEVEL FLIGHT WHEN ENGINE DECELERATED AND QUIT. PRELIMINARY INSPECTION FOUND PC LINE B-NUT AT FUEL CONTROLLOOSE. LINE WAS REMOVED, INSPECTED, AND RE-INSTALLED. ENGINE GROUND RUN. (X)
BELL BEARING FAILED 07/10/2000 1929
212 204011110005 M/R HUB 20001019SH031
DURING A POST-FLIGHT INSPECTION, DARK BLACK GREASE WAS FOUND ON THE M/R TRUNNION. REMOVED AND DISASSEMBLED M/R TRUNNION. ONE TRUNNION BEARING HAD TOTALLY FAILED. INNER AND OUTER RACES WERE BROKEN. (X)
BELL BELL HOUSING CRACKED 08/30/2000 810
407 206061432121 T/R DRIVESHAFT 20001113SH011
DURING DAILY INSPECTION, FOUND HOUSING CRACKED AND RIVETS MISSING DUE TO HIGH VIBRATION, HOUSING SCRAPPED. (X)
BELL BELL BLADE CRACKED 12/06/2000 2778
407 406016100119 TAIL ROTOR 20001229SH014
DURING DAILY INSPECTION, BLADE CRACKED AT WEEP HOLE, ON THE INBOARD LEADING EDGE. CRACK EXTENDED AFT FOR ABOUT 1.50 INCHES. (X)
BELL TEXTRON SLEEVE CONTAMINATED 12/19/1999 917
407 COLLECTIVE BYPASS SPOOL 20000807SH004
SERVO ACTUATOR REMOVED FROM AIRCRAFT DUE TO BINDING IN COLLECTIVE LEVER. CIRCUMSTANCES UNKNOWN. SHOP INSPECTION REVEALED SERVO BYPASS SPOOL WAS BINDING IN BYPASS SPOOL SLEEVE. SPOOLS AND SLEEVE CONTAMINATED WITH SOME FORM OF COATING. THIS COATING COULD NOT BE SEEN, BUT WAS WASHED OFF. NORMAL SPOOLS AND SLEEVE OPERATION RESTORED. CAUSE UNKNOWN. (X)
BELL BEARING ROUGH 07/26/2000
407 407340339103 TAIL ROTOR 20000804SH007
TAIL ROTOR HANGER BEARINGS, P/N 407-340-339-103, HAVE BEEN FOUND ROUGH AND FAILED PREMATURELY ON MANY OCCASIONS DURINGINSPECTIONS. THE GREASE USED TO LUBRICATE THESE BEARINGS IS BEING FORCED OUT BY SUCTION CREATED BY THE OIL COOLERS ROTATING IMPELLER (FAN). SUBMITTER SUGGESTED THE MFG OF THESE BEARINGS DEVELOP A HIGHER QUALITY OF SEAL MORE DURABLE TO RETAIN GREASE IN BEARING. (X)
BELL ALLSN DRIVE SHAFT FAILED 10/29/2000 1806
407 250C47B 206340300105 TRANSMISSION 20001206SH008
IN-FLIGHT, PILOT HEARD A LOUD POP. LANDED AT THE NEAREST PLATFORM AND AFTER SHUT DOWN, FOUND FORWARD FLEXURE ON INPUT DRIVESHAFT HAD FAILED. ONE OF THE FORWARD FLEXURES FAILED AT THE BOLT HOLE AND A PORTION OF THE FLEXURE WENT THROUGH THE TRANSMISSION DECK/CABIN ROOF. (X)
BELL ALLSN ALLSN GEAR BROKEN 06/02/2000 3100
407 250C47B C47B 6893673 GEARBOX 20001026SH001 2958
CHIP LIGHT WAS DETECTED ON AIRCRAFT. CHIP DETECTORS WERE PULLED AND INSPECTED. LARGE PIECE OF GEAR TOOTH WAS FOUND ONPLUG. LARGE PIECE OF GEAR TOOTH BROKE OFF DURING FLIGHT. CAUSE FOR BROKEN GEAR TOOTH WAS DUE TO EXCESSIVE GALLING EXTENDING UP TO FORWARD END OF SMALL GEAR TEETH. (X)
BELL LIFE RAFT WILL NOT TEST 02/26/2000 1710
430 BHLCOMP18220 EMERGENCY EQUIP AC2A0000035
JETTISONABLE LIFE RAFT WOULD NOT PASS 25 POUND PULL TEST FOR DEPLOYMENT. FOUND TORSION SPRING BHL/COMP.1728-201 INSTALLED TOO TIGHT AND WASHERS ADDED TO RELEASE HANDLE AT PIVOT POINT WHICH ARE NOT CALLED OUT IN THE PARTS MANUAL OR MM. ADJUSTED SPRING AND REMOVED WASHERS. RAFT RELEASED PER
BELL DRIVE SHAFT DEFECTIVE 07/12/2000
430 230811150 STARTER GEN AC2A0000072
PART IS DEFECTIVE. SHAFT DIAMETER THAT ENGAGES THE ARMATURE IS TOO LARGE. SUBMITTER STATED THIS IS A MANUFACTURING DEFECT. REPLACED SHAFT. (X)
BOLKMS BOLT CRACKED 09/19/2000 728
BK117B1 10514101111 M/R BLADE 20001017SH028
AGC/CJI - DURING POST-FLIGHT FOUND MAIN ROTOR BLADE SECONDARY BOLT PROTRUDING UP 1 INCH OUT OF BOLT HOLE. NUT AND REMAINING PART OF BOLT MISSING. (COMPLETELY CRACKED IN HALF). POSSIBLE CAUSE: UNDER INVESTIGATION. (X)
CESSNA CONT HOSE LEAKING 12/11/2000
140 C8512 CARBURETOR 20001228SH002
DURING ANNUAL INSPECTION, THE FLEXIBLE FUEL HOSE WAS FOUND WET WITH FUEL NEAR ONE OF THE FITTINGS. THE HOSE WAS NOT THAT OLD AND WAS MADE IN THE FIELD. (X)
CESSNA STRAP BROKEN 02/27/2000
152 05235221 RT FUEL TANK 20000524SH015
IT WAS NECESSARY TO PULL THE RT WING FUEL TANK TO CONFIRM FUEL LEAK LOCATION. THE AFT OUTBOARD STRAP ASSY WAS FOUND BROKEN ACROSS THE SCREW HOLE. FURTHER EXAM OF STRAP REVEALED THE GRAIN OF THE ALUMINUM WAS PARALLEL TO THE BREAK AS WELL AS THE BEND. IT IS BELIEVED THAT IF THE GRAIN WERE PERPENDICULAR TO THE BEND RADIUS, THE LIKELIHOOD OF A FAILURE AT THESCREW HOLE OR BEND WOULD BE GREATLY REDUCED. THE FUEL TANK HAD A PREVIOUS CRACK WHICH WAS WELDED. THE LOSS OF THIS STRAP IS BELIEVED TO HAVE CAUSED THE REPEAT FAILURE OF THE TANK AT THIS SAME LOCATION, WHICH WAS AT THE AFT BOTTOM FUEL OUTPUT (JUST ABOVE IT). THE TANK AND STRAP ASSEMBLIES WERE REPLACED WITH NEW
CESSNA TORQUE TUBE BROKEN 12/07/2000 6237
172RG 24670013 LT PEDAL 20001219SH016
PILOT''S LEFT RUDDER PEDAL REPORTED AS ''NOT WORKING''. FOUND RUDDER PEDAL SUPPPORT POST BROKEN OFF RUDDER PEDAL TORQUE TUBE. MAINTENANCE REMOVED AND REPLACED ENTIRE TORQUE TUBE ASSEMBLY, LINKAGES, BEARING BLOCKS, AND HARDWARE (BOTH SIDES). (X)
CESSNA PIVOT CRACKED 05/02/2000 5872
172RG 24411001 LT MLG 20000531SH007
LEFT BRAKE KEPT BECOMING SOFT AND LOOSING HYDRAULIC FLUID WITH NO EXTERNAL LEAKS FOUND. REMOVAL AND DYE PENETRANT INSPECTION OF LEFT MAIN GEAR PIVOT REVEALED CRACK IN RADIUS OF SPLINES INTO BRAKE FLUID PASSAGE. (X)
CESSNA LYC SEAL FAILED 05/02/2000 1512
172S IO360L2A 06A19956 ACCESSORY SECT 20000531SH006
DURING FINAL APPROACH, PILOT NOTED LOW OIL PRESSURE INDICATION. DURING INVESTIGATION OF OIL LOSS, IT WAS NOTED THAT THE OIL SEAL LIP WAS TURNED OUTWARD AND THE TENSION SPRING WAS MISSING. APPROXIMATELY 1 QUART OF OIL REMAINED IN THE OIL SUMP. SEAL WAS IN LOWER VACUUM PUMP ADAPTER. (X)

CESSNA BEAM DAMAGED 05/23/2000
402B LT AND RT ENGINE 20000523SH022
LT AND RT ENGINE BEAMS (INBD AND OTBD) BUCKLING AND HEAT DAMAGE. GENERAL CORROSION BEHIND ENGINES. LT AND RT ENGINES CANTED BULKHEADS. CORROSION AND HEAT DAMAGE. LT AND RT WING LOWER SPAR CAPS, OVERSIZED HOLES WITH RIVNUTS INSTALLED. LT AND RT ENGINE NACELLE STIFFENERS BEHIND FWD SPAR HAVE BEEN CUT. RT ELEVATOR HAS SLOP IN TORQUE TUBE. SERVICE KIT 402-46 WING FRONT SPAR LOWER CAP MODIFICATION AND ACCESS PANEL INSTALLATION IN WORK. (X)
CESSNA SKIN CORRODED 12/14/2000
TU206A FUSLEAGE 20001220SH007
DURING AVIONICS RETROFIT, CORROSION NOTICED IN THE HORIZONTAL STABILIZER. FURTHER INSPECTION FOUND 85 PERCENT OF THE RUDDER ASSY WITH MAJOR CORROSION AND CABIN ROOF AREA AND MAIN WING SPAR ATTACHMENT POINTS. THIS AIRCRAFT SPENT MOST OF ITS LIFE IN FLORIDA AND PUERTO RICO. NO PROVISION IS MADE BY MANUFACTURER TO INSPECT MANY OF THESE AREAS. SUBMITTER SUGGESTED SMALL INSPECTION HOLES BE
DOUG STIFFENER CRACKED 11/27/2000 903
600N FUSELAGE 20001218SH020
DURING AN INSPECTION OF THE AIRCRAFT, A STIFFENER WAS FOUND CRACKED, P/N 369D23022-5. THE CRACK IS LOCATED ON THE INBOARD SIDE WHERE THE TWO RIVETS THAT HOLD THE STIFFENER TO THE UPPER MAST DECK.
DOUG EXHAUST PIPE CRACKED 09/11/2000 321
MD900 900P2630115102 ENGINE 20001107SH021
RIGHT PRIMARY EXHAUST NOZZLE CRACKED BEYOND SERVICEABLE LIMITS. REPLACED WITH NEW UNIT, CORRECTED PROBLEM. (X)
DOUG PWA BREATHER DAMAGED 10/28/2000 4225
MD900 PW206A 900P3650108103 ENGINE OIL 20001215SH032
HOSE, ENGINE OIL BREATHER, INSIDE OF HOSE IS BUBBLED. REPLACED WITH NEW UNIT, CORRECTED UNIT. (X)
DOUG IAE BEARING FAILED 03/08/2000
MD9030 V2500A1 4T0170 MAIN GRBX ASSY 20000518SH011
GEARBOX REMOVED FOR METAL IN CHIP COLLECTOR AND STRAINER. DISASSEMBLY, INSPECTION DISCLOSED BEARING (CAGE) FAILURE. MATERIAL FORWARDED TO IAE ENGINEERING FOR REVIEW. (X)
EXTRA WIRE BENT 03/29/1996 459
EA300 PC43402A0 TRIM CONTR 20001227SH025
ELEVATOR TRIM FORWARD SPRING STEEL WIRE WAS FOUND BENT CLOSE TO THE TRIM CONTROL LEVER. THIS RENDERED THE SYSTEM UNUSABLE AND UNAIRWORTHY DUE TO THE POSITION IT WAS IN WHEN IT WAS BENT REMAINS. THE PILOT COULD POSSIBLY NOT KNOW IT WAS BENT AS IT FEELS FREE WHEN OPERATED IN THE COCKPIT.
GULSTM FITTING BROKEN 12/11/2000
112TCA RT MLG 20001222SH005
RIGHT MAIN GEAR INBOARD HYDRAULIC FITTING BROKE. COMPLETE LOSS OF HYDRAULIC FLUID, FITTING WAS RUBBING ON WING SPAR SUPPORT BRACKET. THIS FAILURE HAPPENED AT 20 INCHES BELOW AIR TEMP. (X)
GULSTM CABLE FRAYED 05/11/2000 5313
690B 500012265 RUDDER CONTROL 20000524SH014
LEFT AND RIGHT FORWARD RUDDER CABLES HAD BROKEN WIRE STRANDS AT LEFT AND RIGHT PULLEY AT BS 99.00. FOUND DURING 100-HOUR INSPECTION. ROTATED CABLES 10 DEGREES FROM PULLEY TO SEE BROKEN WIRE STRANDS. CAUSE, DETERIORATION DUE TO TIME. AIRCRAFT TT: 5,313 HOURS. REPLACED CABLE ASSY. (LEFT FROM RUDDER PEDAL AFT TO TURNBARREL AT STA 335.00) AND (RIGHT FROMRUDDER PEDAL AFT TO TURNBARREL AT STA 353.00).
HUGHES ALLSN LINE FAILED 05/24/2000 151
369E 250C20B 369A8010681 PLENUM CHAMBER 20000818SH001
COMPRESSION FITTING PROVIDED WITH PLASTIC LINE FAILED IN ENGINE PLENUM CHAMBER AT FULL POWER DURING FLIGHT CAUSING OIL INGESTION INTO ENGINE CAUSING TURBINE OUTLET TEMPERATURE AND TORQUE SURGE WHEN OIL IGNITED WITH FUEL AIR MIXTURE IN BURNER CAN. FOUR QUART OIL SYSTEM, OIL REMAINING IN SYSTEM LESS THAN ONE PINT. PILOT ABLE TO SAFELY LAND MACHINE. STRONGLY SUGGEST METAL LINES IN PLENUM CHAMBER INSTEAD OF PLASTIC. MANUFACTURER IS AWARE OF PREVIOUS PROBLEMS W/PLASTIC LINES. (X)
HUGHES MAST DAMAGED 10/13/2000 9553
500N MAIN ROTOR 20001102SH033
FOUND PAINT SEALANT INSIDE MAIN ROTOR MAST TUBE BLISTERED AND FALLING INTO M/R TRANSMISSION GEARBOX. APPEARED THAT M/RTRANSMISSION OIL MOBILE SHC 626 IS NOT COMPATIBLE WITH SEALANT PAINT ON INSIDE OF
HUGHES GEAR SPALLED 10/13/2000 4603
500N 369D25100507 M/R TRANSMISSION 20001108SH027 1935
MAIN ROTOR CHIP DETECTORS PICKING UP MAJOR METAL. OPENED GEARBOX AND INSPECTED. FOUND SPALLING OF ALL GEARS. SUBMITTER SUGGESTED OIL NOT LUBRICATING UNDER LOADS. USING MOBIL SHC 626 PER MDHC NOTICE
HUGHES HUGHES NUT LOOSE 09/18/2000 24
500N 369H7024 UNILOCK 20001017SH022
AT ACTT: 23.5 HOURS, THE UNILOCK, PN 369A7010501 SN 024598-5326, WAS INSTALLED IN NEW CONDITION TO REPLACE A LEAKING UNILOCK. AFTER 23.6 HRS OF OPERATION, PILOT RETURNED STATING THE CYCLIC CONTROL HAD PLAY LONGITUDINALLY. THE GRIP WOULDMOVE SEVERAL INCHES BEFORE THE INPUT WOULD BE SENT TO THE ROTOR SYSTEM. FOUND NUT, PN 269H7024, WAS LOOSE ALLOWING THEINPUT ROD END TO MOVE. IF THE NUT COMPLETELY LOOSENED, THE ROD END MAY SEPARATE FROM THE UNILOCK LEAVING PILOT WITH NOLONGITUDINAL
MAULE MUFFLER CRACKED 03/14/2000 223
MX7180B 5327F32 RT EXHAUST 20000518SH012
PILOT REPORTED SMELL IN COCKPIT. NEXT TAKEOFF, HEARD LOUD RATTLE, LANDED. FOUND RT OUTER MUFFLER SHROUD LOOSE, THEN FOUND MUFFLER CRACKED AT 100.3 HRS. LT MUFFLER CHANGED. FACTORY ADVISED MATERIAL OF MUFFLER HAD BEEN CHANGED; SO, THAT 500 HRS SEEMED TO BE THE LIFE OF THESE UNITS AND STATED PROBLEM WAS POSSIBLE DUE TO SHORT HEADER STACKS AND WHEN PILOT PULLED THROTTLE BACK FAST, CAUSED BACKFIRING IN MUFFLER AND DAMAGE. (X)
MOONEY HOSE LEAKING 12/11/2000 300
M20A OIL COOLER 20001227SH033
OPERATOR REQUESTED MECHANIC TO TRY AND LOCATE AN OIL LEAK IN ENGINE COMPARTMENT. AFTER INVESTIGATING, THE OIL COOLER HOSE WAS FOUND TO HAVE A SMALL HOLE IN THE EXTERIOR AROUND MIDWAY OF
MOONEY TURBOCHARGE FAILED 12/22/2000
M20K 4078109001 ENGINE 20001227SH002
OPERATOR WAS CRUISING AT FL 210 WHEN A LOUD NOISE OCCURED FOLLOWED BY AN IMMEDIATE PARTIAL REDUCTION IN POWER. THE OPERATOR BEGAN IMMEDIATE DESCENT AND VECTORED TO NEAREST AIRPORT FOR LANDING. UPON INVESTIGATING PROBLEM, THE TURBO SHAFT WAS FOUND TO HAVE FAILED AND THE TURBO IMPELLER MOVED AGAINST THE HOUSING AND SHEARED SEVERAL BLADES. MOST OF THE AIRCRAFT""S OIL WAS LOST OVERBOARD. FOUND METAL IN THE INTERCOOLERS AND FILTER ASSEMBLY. TURBO ASSEMBLY WAS REMOVED AND SENT TO OEM. ENGINE WAS REMOVED AND SENT OUT FOR INSPECTION. NO DEFINITE CAUSE FOR THE FAILURE HAS

PIPER SKIN CORRODED 04/13/2000 9258
PA28161 6531904 LT AND RT WING 20000516SH029
CRACKS WERE FOUND USING DYE PENETRANT METHOD, ALL OF THE ABOVE AIRCRAFT WERE DURING ROUTINE MAINTENANCE TO REPAIR FUEL LEAK FROM OVERWING FAIRING ASSY, REMOVED LEFT OVERWING FAIRING AND DISCOVERED EXTREME CASE OF EXFOLIATION CORROSION THATCAUSED A HOLE THROUGH UPPER WING SKIN. AFTER FINDING CORROSION ON LEFT SIDE, DECIDED TO PULL OFF RIGHT OVERWING FAIRING AND DISCOVERED MORE PITTING CORROSION, BUT NOT AS SEVERE AS LEFT SIDE. POSSIBLE CAUSES ARE MOISTURE UNDER OVERWING FAIRINGS. RECOMMEND CONSCIENTIOUSLY PERFORMED INSPECTION OF THE OVERWING FAIRING AREA. (X)

PIPER REGULATOR LEAKING 11/28/2000 17
PA31350 A23D0475 HEATER 20001219SH014
FUEL OBSERVED DRIPPING FROM DRAIN LINE. AFTER GROUND RUN OF ENGINE WITHOUT HEATER BEING USED. VALVE WAS REMOVED FROM AIRCRAFT AND 30 PSI SHOP AIR WAS APPLIED TO INLET WITHOUT POWER TO OPEN VALVE. LEAK CHECK FLUID WAS APPLIED TO VALVE BODY AND LEAK WAS FOUND COMING FROM UNUSED MOUNTING HOLE

PIPER LYC ROD BOLT FAILED 04/28/2000
PA32R300 IO540K1A5 SL75060 NR 1 PISTON ROD 20000524SH016 214
AIRCRAFT ENGINE OIL TEMPERATURE AT 200 DEGREES. LOSS OF OIL PRESSURE AT NORMAL CRUISE MADE OFF-AIRPORT LANDING. FOUNDNR 1 PISTON ROD HAD FAILED. POSSIBLE CAUSE FOR FAILURE, SUPERIOR ROD CAP BOLT FAILED CAUSING ROD TO COME LOOSE, KNOCK HOLE IN ENGINE CASE. (X)

ROBSIN LYC RETAINER BROKEN 10/16/2000 3873
R22BETA O320B2C GASCOLATOR 20001102SH029 1874
DURING A 100-HOUR INSPECTION, THE GASCOLATOR BOWL RETAINING WIRE BROKE WHILE BEING ASSEMBLED. THE BREAK OCCURRED AT THE FLATTENED PART UNDER THE SCREW. IF THE BREAK HAD OCCURRED DURING FLIGHT, IT WOULD HAVE CAUSED A MASSIVE FUEL LEAK. (X)

SCWZER PWA PUSHROD TUBE BROKEN 12/05/2000 5187
G164B R1340AN1 11876 NR 3 CYL EXH 20001222SH010 182
AIRCRAFT WAS BEING TEST RUN FOLLOWING ENGINE FAILURE. UPON RUN-UP, ENGINE STARTING MISSING AND WOULD NOT HOLD RPM OVER600. AIRCRAFT WAS SHUT DOWN. ALL ROCKER BOX COVERS WERE PULLED AND INSPECTION REVEALED THE NR 3 CYLINDER EXHAUST ROCKER PLAY WOULD GO FROM .010 INCH TO APPROXIMATELY .125 INCH AND A RATTLE WAS ALSO HEARD. UPON REMOVAL OF THE PUSH ROD TUBE, FOUND THE TOP END OF THE ASSY HAD BROKEN IN THE AREA WHERE THE TUBE SLIDES INTO THE END FITTING CAUSING THE ENGINE TO MALFUNCTION. (X)

SKRSKY SKRSKY ARM CRACKED 06/29/2000
S64E 6511207101041 TAIL ROTOR 20001218SH006 1432
ARM ASSEMBLY HAD CRACK INDICATION ON OUTBOARD MOUNTING LUG EXTENDING FROM .256 INCH/.252 INCH DIAMETER THROUGH HOLE TO .34 INCH RADIUS. CIRCUMSTANCES UNDER WHICH CRACKING OCCURRED ARE UNKNOWN. POSSIBLE CAUSE IS FROM FRETTING MOVEMENT BETWEEN SLEEVE MOUNTING EARS, AND ARM ASSY MOUNTING LUGS. ALL THROUGH HOLES OF BOTH SLEEVE AND ARM ASSY MET BLUEPRINT REQUIREMENTS .256

SKRSKY SKRSKY GEAR FAILED 08/16/2000 3109
S64F 643520411102 M/R GEARBOX 20001018SH029 699
1ST STAGE PLANETARY PINION GEAR, PN 6435-20411-102, SN 1524, UNKNOWN TT, FAILED IN MAIN GEARBOX, PN 6435-20500-049, SN A6-165, LEAVING LARGE FRAGMENT OF FERROUS METAL IN SUMP, SUMP SCREEN. TEARDOWN INSP REVEALED ENTIRE TOOTH FRACTURED AT JUNCTION OF CASE TO CORE. SECONDARY DAMAGE FOUND ON 3 EACH 2ND STAGE PLANETARY PINION GEARS, PN 6435-20057-012, RING GEAR, PN 6435-20165-012, AND 1ST STAGE SUN GEAR, PN 6435-20412-102, ALL OF WHICH WERE BLENDED, RETURNED TO SERVICE. DURING OPERATION, CREW HEARD A LOUD NOISE AND EXPERIENCED A VIBRATION PRIOR TO REGISTERING A CHIP LIGHT. A PREVIOUS MDR WAS SUBMITTED 4-20-00, SAME PN GEAR FRACTURED A GEAR TOOTH AT 697.0 HRS ON DIFFERENT GEARBOX. (X)

SKRSKY ALLSN SCROLL DAMAGED 05/31/2000 254
S76 250C30S 23072848 COMPRESSOR AC2A0000044
ENGINE WOULD NOT PASS LIMITING CHECK AS OUTLINED IN SIKORSKY S76 FLIGHT MANUAL. ENG ALSO REPORTED FOR LOW POWER. ENG REMOVED. UPON DISASSEMBLY OF TURBINE, 1ST STAGE TURBINE NOZZLE AND 1ST STAGE TURBINE WHEEL WERE FOUND DAMAGED FROM FOREIGN OBJECT PASSING THROUGH TURBINE. BOTH NOZZLE AND WHEEL WERE REJECTED DUE TO THIS DAMAGE. COMPRESSOR DISASSEMBLED, COMP SCROLL, PN 23072848, WAS FOUND WITH ONE PIECE OF TURNING VANE MISSING, AREA BROKEN AWAY IS .50 INCH ACROSS AND ROUGHLY RECTANGULAR AND THIS MISSING PIECE OF TURNING VANE IS OBJECT THAT DAMAGED TURBINE, LEADING TO LOWER POWER. ENG

SKRSKY CLEVELANDPNU RESTRICTOR FAILED 01/20/2000 6607
S76A 1944 SS49MC90J420R NLG ACTUATOR 20001113SH013
LANDING GEAR ACTUATOR WOULD NOT LOCK IN DOWN POSITION. ACTUATOR RESTRICTOR ASSEMBLY FILTER AND ORIFICE DISPLACED FROMRESTRICTOR AND FORCED INTO ACTUATOR TERMINAL. THIS PREVENTED DOWNLOCK KEEPER FROM MOVING INTO LOCKED POSITION. (X)

SKRSKY BEARING WORN 10/14/1999
S76A MKB16B TAIL ROTOR 20000804SH002
PILOT REPORTED THAT T/R PEDALS WERE DRIVING THE COLLECTIVE. TROUBLESHOOTING FOUND BEARING WORN AND ROUGH. REPLACED BEARING AND OPS CHECK C/W. SUBMITTER RECOMMENDED BEARINGS BE REPLACED WHEN T/R CABLES ARE REPLACED. THIS IS THE 3RD SET OF BEARINGS REPLACED ON S76 FLEET. (X)

SNIAS BALL JOINT DETACHED 06/28/2000
AS350B1 961305A5710530 POWER LEVER 20000718SH004
DURING STARTING SEQUENCE, PILOT ATTEMPTED TO SHUT DOWN THE ENGINE DUE TO SLOW START. ENG KEPT RUNNING, PILOT WENT TO EMERG SHUT OFF. UPON INSP, POWER LEVER ''END'' HAD COME OFF OF ''BALL JOINT'' WHICH IS ATTACHED TO FUEL CONTROL. THE SAFETY PIN THAT SAFTIES THE ''END'' RELEASE WAS IN PLACE. NOTED THE ''END'' WOULD COME OFF THE ''BALL JOINT'' WHEN RELEASE WAS PRESSED INSPITE OF SAFETY PIN BEING IN PLACE. IT IS RECOMMENDED THAT INSP CRITERIA FOR PARTS IN QUESTION (BALL JOINT AND THE END) BE ADDED TO APPROPRIATE MAINT WORK CARDS AND PROCEDURE BE ADDED AS WELL. COPY OF THIS MDR WILL BE SENTTO

SNIAS DRIVE SHAFT DAMAGED 11/07/2000 486
AS350B2 350A34021006 TAIL ROTOR 20001206SH009
DURING 500-HOUR INSPECTION, FOUND INNER SLEEVE OF AFT MOST BEARING SLIPPING ON T/R DRIVESHAFT. IT APPEARED TO HAVE BEEN SPINNING FOR SOME TIME AND RUBBER HAD ACTUALLY TRANSFERRED FROM SLEEVE TO SHAFT. SHAFT ITSELF WAS NOT DAMAGED. REPLACED ENTIRE SHAFT ASSEMBLY DUE TO WARRANTY AND REPAIR

SNIAS CONNECTOR DAMAGED 02/26/2000 605
AS350B2 350A67402301A OIL PRESS IND 20000605SH011
HARNESS INDICATOR, ENGINE OIL PRESSURE HAD INTERNAL SHORT. ENGINE OIL PRESSURE FLUCTUATED. REPLACED WITH NEW UNIT, CORRECTED PROBLEM. (X)

SNIAS		CASE	CRACKED	08/18/2000	395
AS350B2		RG355	BATTERY	20001017SH014	

DURING 100-HOUR INSPECTION, LEAD ACID BATTERY WAS FOUND WITH A CASE CRACK IN ALL THE LOWER BOX CORNERS. ALL OF THE CRACKS ARE 1 INCH TO 2 INCHES LONG. BATTERY IS INSTALLED IN THE TAIL BOOM UNDER AN AEC STC. AT APPROX 119.48 STA, THE LEAD ACID BATTERY IS 4 POUNDS AND THE NICAD, IS 38 POUNDS. TIME ON BATTERY 395 HOURS. WITH THE INCREASED WEIGHT OF BATTERY AND LOCATION, POSSIBLY THE CASE OF THE BATTERY CANNOT STAND UP TO THE VIBRATIONS. ATTACH BRACKET WHERE THE BATTERY CLAMPS DOWN IS SQUARE CUT NOT ROUNDED. SUBMITTER STATED SECOND ACFT IN FLEET AT THIS SITE WITH THIS CONDITION. TO-DATE,SUBMITTER HAS HAD 6 CASES OF BATTERY BOX CASE CRACKING. (X)

SNIAS	STARTER GEN	INOPERATIVE	11/01/2000	
AS350B3	524031	ENGINE	20001215SH012	

STARTER/GENERATOR UNIT INOPERATIVE. BRUSH SPRING BROKE RESULTING IN FAN DAMAGE. REPLACED WITH NEW UNIT, CORRECTED PROBLEM. (X)

SNIAS	LINE	LEAKING	03/01/2000	500
AS350B3		MO4 TO MO5	20000712SH008	

THE MO4 TO MO5 FLEX LINE STARTED LEAKING AT 500 HOURS. THE LEAK WAS IN THE AREA OF THE FLEX BRAID AND COULD NOT DETECTANY EXTREME DAMAGE OF THE FLEX LINE. REPLACED WITH NEW FLEX LINE AND PERFORMED LEAK CHECK OK. (X)

SNIAS	BUSHING	SEIZED	08/31/2000	
AS350B3		MAIN ROTOR	20000908SH013	

FOUND BUSHINGS LOCKED UP CAUSING DAMAGE TO THE SCISSORS HOUSING, PN 350A37-1126-02. FOUR NEW PARTS DID THE SAME THING. PARTS FROM ANOTHER AIRCRAFT WORKED OK. THE NEW PARTS WERE DAMAGED IN 2-5 HOURS. POSSIBLE CAUSE IS BUSHINGS IN THE NEW PARTS MAY HAVE BEEN MISALIGNED. (X)

SNIAS	TACHOMETER	INOPERATIVE	11/05/2000	
AS350BA	0177555170	ENGINE	20001120SH053	

TACHOMETER BOX INOPERABLE. BLEED VALVE WILL NOT CLOSE. (X)

SNIAS	BEARING	FAILED	07/30/1999	611
AS350BA	350A33215300	TAIL ROTOR	20000713SH018	

THIS HAS BEEN THE SECOND OCCURRENCE IN WHICH THE T/R SPHERICAL BEARINGS HAVE FAILED. THE FIRST OCCURRED AT ACTT: 138.2 HOURS IN WHICH THE MECHANIC FOUND THE BEARING ELASTOMERS TORN BEYOND LIMITS. THE SECOND FAILURE OCCURRED AT 748.7 HOURS ACTT, PART TT, 610.5 HOURS. PILOT NOTED A VIBRATION IN THE AIRFRAME. UPON INSPECTION, THE MECH. NOTED THE SPHERICAL BEARING ELASTOMERS WERE COMPLETELY WORN THROUGH. BOTH THESE FAILURES OCCURRED ON AN AIRCRAFT WITH A TT OF 748.7 HOURS. (X)

SNIAS	SHAFT	WORN	08/25/2000	
AS350BA		HYD PUMP ASSY	20000918SH001	

HYDRAULIC PUMP SHAFT SPLINE WORN MAKING HYDRAULIC SYSTEM INOPERATIVE. THIS HAPPENED ON A FERRY FLIGHT. INSPECTION REQUIREMENTS ARE EVERY 500 HOURS. THE LAST INSPECTION ON THIS UNIT WAS ABOUT 390.2

SNIAS	BLOWER	FAILED	10/04/2000	126
AS350BA	0500846	COCKPIT FAN	20001016SH001	

DURING FLIGHT, SMOKE FILLED INTO THE CABIN. FIRST, TURNED ALL ELEC OFF SWITCH. VENTED THE CABIN BY OPENING THE FRONT VENT AND WINDOW (PILOT SIDE). AFTER DETERMINING THERE WAS NO DANGER TO THE SAFE OPERATION OF THE AIRCRAFT, CONTINUED TOALTERNATE AIRPORT, THEN TURNED ON PRIMARY INSTRUMENTS AND LATER THE AIRCRAFT FAN, THEN DETERMINED IT WAS THE AIRCRAFT 7INCH FAN. BECAUSE OF THE NATURE OF THE FAILURE, RETURNED TO THE PRIMARY A/P WITHOUT INCIDENT. (X)

SNIAS	TMECA	ENGINE	STALLED	10/13/2000	8103
AS350BA	ARRIEL1B	70BM031070	ENGINE BAY	20001108SH030	2015

PILOT COMPLAINT WAS SMALL COMPRESSOR STALLS ''POPPING SOUND'' OCCURRING WHEN THEY WOULD DROP COLLECTIVE. THIS WAS AN INFREQUENT OCCURRENCE THAT WAS HAPPENING OVER A PERIOD OF DAYS PRIOR TO INSPECTION OF THE TURBINE SECTION. FULL INSPECTION OF THE COMPRESSOR, BLEED VALVE, AND RELATED SYSTEM WERE CONDUCTED, WITHOUT SUCCESS. INSPECTION OF THE HOT END WAS CONDUCTED AND DISCOVERY OF BROKEN TURBINE BLADES WAS DISCOVERED. ENGINE WAS REMOVED AND SHIPPED TO ACRO FOR INSPECTION. (X)

SNIAS	SPIDER	STUCK	03/29/2000	48
AS350D	350A33200406	TAIL ROTOR	20000605SH014	

PITCH CHANGE, SPIDER ASSEMBLY - STICKS ON PEDAL MOUNT. BEARING HAS EXCESS PLAY. REPLACED WITH NEW UNIT, CORRECTED PROBLEM. (X)

UROCOP	CONTROL BOX	INOPERATIVE	10/21/2000	2
EC135P1	45023500	ELECTRICAL SYS	20001107SH005	

ELECTRICAL MASTER BOX, RT FULL OPT, UNIT INOPERATIVE. REPLACED WITH NEW UNIT, CORRECTED PROBLEM.

UROCOP	PWA	WIRE	SHORTED	08/29/2000	
EC135P1	PW206B		STARTER GEN	20000919SH016	

BRUSH WIRE CONTACTED HOUSING AFTER A BRUSH INSPECTION. EXTREME CARE SHOULD BE TAKEN DURING RE-ASSEMBLY AFTER INSPECTION. (X)

OMB No. 2120-0003

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MALFUNCTION OR DEFECT REPORT

OPER. Control No.	
ATA Code	
1. **A/C Reg. No.**	**N-**

Enter pertinent data	**MANUFACTURER**	**MODEL/SERIES**	**SERIAL NUMBER**
2. **AIRCRAFT**			
3. **POWERPLANT**			
4. **PROPELLER**			

5. SPECIFIC PART *(of component)* CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location.

6. APPLIANCE/COMPONENT *(Assembly that includes part)*

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

8. Comments *(Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)*

Optional Information:

Check a box below, if this report is related to an aircraft

☐ Accident; Date _____ ☐ Incident; Date _____

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SUBMITTED BY:

TELEPHONE NUMBER: ( ) –

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